agreements was shown to have significant impacts on the timing and volume of transfers.

Ultimately, the results of this study suggest that, with the proper infrastructure, transfers from Cary to OWASA and/or Durham could be used to avoid shortfalls during periods of drought until such time as new sources are available. While the cost of these transfer agreements may be high during drought years, the average cost is likely to be relatively small. In fact, the estimated annual average costs of the transfer programs considered here compare quite favorably with the capital costs associated with building new capacity, suggesting that these programs could even be used as a means of forestalling the development of new sources.

Water pricing, funding, and institutional capacity

Water System Economics and Rates

The twentieth-century business model for both public and private water systems was to borrow funds to build water supply, water treatment, and water distribution systems and to sell gallons of water to pay operating, maintenance costs, and debt service. Water systems have high fixed costs. Most public and private water systems make their "profit" selling more water during the summer for irrigation, cooling, and other purposes. High water sales and revenues (in many systems record-high water sales) during July and August 2007 cushioned the blow of water conservation and low water revenues in the fall of 2007 and winter of 2008.

This business model is a major barrier to implementation of water efficiency and conservation programs. Water systems need to change their business model to sell water services instead of gallons of water. Local elected officials and the NC Utilities Commission set rates for public and private systems, respectively. Electric and gas utilities are beginning to sell electric and gas services instead of kilowatts and therms. Section 9 of HB 2499 provides an incentive for water systems seeking state grants and loans to adopt conservation rates. A quick, useful way to check and compare water rates among systems in North Carolina is to consult the rates dashboards compiled and published by the UNC Environmental Finance Center.

Few public water systems in North Carolina practice true asset management, depreciate their assets, and set rates accordingly. Many systems are not sending the correct pricing signal to their customers (understood as the price that fully covers the costs of extracting, treating, and distributing the water, including the depreciation of the system). Accordingly, customers waste water. Appointed members of water and sewer authorities are more likely to charge for the true costs of providing water services than are local elected officials. Appointed members are more likely than elected officials to vote for rate increases. Some elected officials perceive raising water rates as raising taxes.

Water System Funding

It is important that the sources of capital funding for water systems do not, through their funding alternatives, create disincentives for efficient system management. Historically, many of North Carolina's water systems depended on grant funding—originally from the federal government and then, when federal grant funding began ramping down in the 1980s, on state grants. Today there is a stronger sense that water system revenues and low- or no-interest loans are preferable to grants, from a policy point of view, and most